

PERBANDINGAN *SUPPORT VECTOR MACHINE* DAN *RANDOM FOREST* UNTUK KLASIFIKASI KEPUTUSAN PEMBELIAN *ONLINE* BERDASARKAN *ELECTRONIC WORD OF MOUTH* DAN KEPERCAYAAN KONSUMEN BERBASIS *WEB*

ABSTRAK

Pertumbuhan *e-commerce* yang terus meningkat menjadikan keputusan pembelian *online* dipengaruhi oleh sejumlah faktor, termasuk *Electronic Word of Mouth* (eWOM) dan Kepercayaan Konsumen. Ketersediaan berbagai ulasan serta informasi pada platform digital membuat konsumen memiliki lebih banyak pertimbangan sebelum menentukan pilihan pembelian. Kondisi tersebut membutuhkan metode klasifikasi yang dapat mengidentifikasi keputusan pembelian berdasarkan kedua faktor tersebut. Penelitian ini bertujuan untuk mengklasifikasikan keputusan pembelian *online* berdasarkan variabel *Electronic Word of Mouth* (eWOM) dan Kepercayaan Konsumen dengan melakukan perbandingan antara algoritma *Support Vector Machine* (SVM) dan *Random Forest*. Data penelitian diperoleh melalui kuesioner yang diberikan kepada responden yang memiliki pengalaman melakukan pembelian secara *online*. Data yang terkumpul selanjutnya diproses melalui tahapan *Editing*, *cleaning*, *preprocessing*, penentuan fitur, serta penetapan label untuk membentuk *dataset* yang terstruktur. Variabel *Electronic Word of Mouth* (eWOM) dan Kepercayaan Konsumen ditetapkan sebagai fitur masukan, sedangkan Keputusan Pembelian *Online* digunakan sebagai label klasifikasi. Implementasi penelitian diwujudkan dalam sistem berbasis *web* dengan menggunakan *framework Laravel* dan *Laragon* sebagai lingkungan pengembangan. Kinerja kedua model kemudian dievaluasi melalui *Confusion Matrix* menggunakan metrik *Accuracy*, *Precision*, *Recall*, dan *F1-Score*. Hasil penelitian menunjukkan bahwa *Support Vector Machine* (SVM) menghasilkan *Accuracy* sebesar 65,43%, *Precision* sebesar 75,51%, *Recall* sebesar 69,81%, dan *F1-Score* sebesar 72,55%. Sementara itu, *Random Forest* memperoleh *Accuracy* sebesar 70,37%, *Precision* sebesar 83,72%, *Recall* sebesar 67,92%, dan *F1-Score* sebesar 75,00%. Hasil perbandingan menunjukkan bahwa *Random Forest* memiliki kinerja yang lebih baik secara keseluruhan karena menghasilkan nilai *Accuracy*, *Precision*, dan *F1-Score* yang lebih tinggi dibandingkan SVM. Oleh sebab itu, *Random Forest* ditetapkan sebagai algoritma dengan kinerja terbaik untuk klasifikasi keputusan pembelian *online* berdasarkan variabel *Electronic Word of Mouth* (eWOM) dan Kepercayaan Konsumen dalam penelitian ini.

Kata kunci: *Electronic Word of Mouth*, Kepercayaan Konsumen, Keputusan Pembelian *Online*, *Support Vector Machine*, *Random Forest*.

**COMPARISON OF SUPPORT VECTOR MACHINE AND
RANDOM FOREST FOR ONLINE PURCHASE
DECISION CLASSIFICATION BASED ON
ELECTRONIC WORD OF MOUTH AND
CONSUMER TRUST WEB-BASED**

ABSTRACT

The continued expansion of e-commerce has made online purchasing decisions increasingly dependent on several factors, particularly Electronic Word of Mouth (eWOM) and Consumer Trust. The availability of diverse reviews and information through digital platforms provides consumers with various considerations before deciding to make a purchase. This condition highlights the need for a classification method capable of identifying purchasing decisions based on these factors. This study aims to classify online purchasing decisions based on Electronic Word of Mouth (eWOM) and Consumer Trust by comparing the performance of the Support Vector Machine (SVM) and Random Forest algorithms. The research data were obtained through questionnaires distributed to respondents with previous experience in making online purchases. The collected responses were processed through several stages, including Editing, cleaning, preprocessing, feature determination, and label assignment to produce a structured dataset. Electronic Word of Mouth (eWOM) and Consumer Trust were designated as Input features, while Online Purchase Decision served as the classification label. The research was implemented through a web-based system developed using the Laravel framework, with Laragon serving as the development environment. The performance of both models was subsequently assessed using a Confusion Matrix with the Accuracy, Precision, Recall, and F1-Score metrics. The results show that Support Vector Machine (SVM) achieved an Accuracy of 65.43%, Precision of 75.51%, Recall of 69.81%, and F1-Score of 72.55%. In comparison, Random Forest obtained an Accuracy of 70.37%, Precision of 83.72%, Recall of 67.92%, and F1-Score of 75.00%. The comparison results indicate that Random Forest delivered better overall performance because it achieved higher Accuracy, Precision, and F1-Score values than SVM. Therefore, Random Forest was determined to be the best-performing algorithm for classifying online purchasing decisions based on Electronic Word of Mouth (eWOM) and Consumer Trust in this study.

Keywords: *Electronic Word of Mouth, Consumer Trust, Online Purchase Decision, Support Vector Machine, Random Forest.*